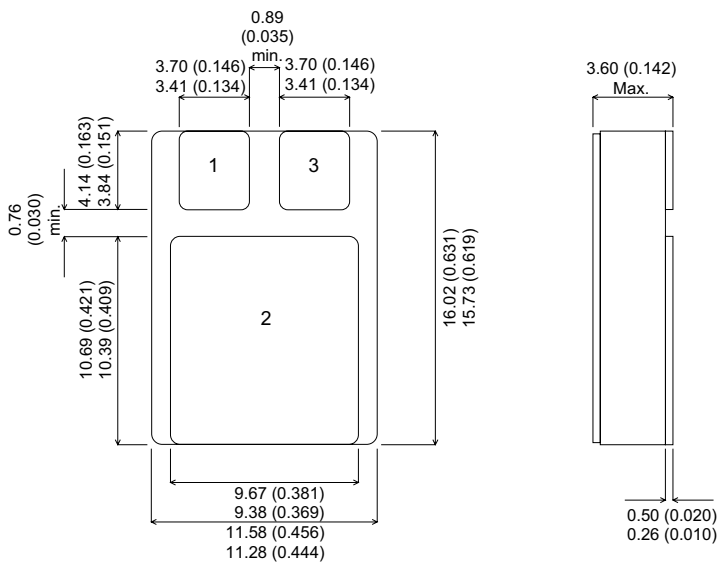


**MECHANICAL DATA**

Dimensions in mm



**SMD1**

Pad 1 – Base      Pad 2 – Collector      Pad 3 – Emitter

**ADVANCED DISTRIBUTED  
BASE DESIGN  
HIGH VOLTAGE, HIGH SPEED NPN  
SILICON POWER TRANSISTOR**

- CERAMIC SURFACE MOUNT PACKAGE
- FULL MIL/AEROSPACE TEMPERATURE RANGE
- SCREENING OPTIONS FOR MILITARY AND SPACE APPLICATIONS
- SEMEFAB DESIGNED AND DIFFUSED DIE
- HIGH VOLTAGE ( $V_{CBO} = 800V$ )
- FAST SWITCHING ( $t_f = 100ns$ )
- HIGH ENERGY RATING

**FEATURES**

- Multi-Base design for efficient energy distribution across the chip.
- Significantly improved switching and energy ratings across full temperature range.
- Ion implant and high accuracy masking for tight control of characteristics from batch to batch.
- Triple guard rings for improved control of high voltages.

**ABSOLUTE MAXIMUM RATINGS** ( $T_{case} = 25^{\circ}C$  unless otherwise stated)

$V_{CBO}$	Collector – Base Voltage	500V
$V_{CEO}$	Collector – Emitter Voltage ( $I_B = 0$ )	250V
$V_{EBO}$	Emitter – Base Voltage ( $I_C = 0$ )	10V
$I_C$	Collector Current	12A
$I_{C(PK)}$	Peak Collector Current	20A
$I_B$	Base Current	3A
$P_D$	Power Dissipation	60W
$R_{\theta}$	Thermal Impedance (when mounted on thermally conducting PCB)	3.0°C/W
$T_j$	Maximum Junction Temperature	200°C
$T_{stg}$	Storage Temperature Range	-55 to +200°C

**ELECTRICAL CHARACTERISTICS** ( $T_{case} = 25^{\circ}C$  unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_{CEO(sus)*}$	Collector - Emitter sustaining voltage $I_C = 100mA$	250			V
$V_{(BR)CBO*}$	Collector - Base breakdown voltage $I_C = 1mA$	500			V
$V_{(BR)EBO*}$	Emitter - Base breakdown voltage $I_B = 1mA$ $I_C = 0$	10			V
$I_{CEO*}$	Collector cut-off current $I_B = 0$ $V_{CE} = 250V$			100	$\mu A$
$I_{CBO*}$	Collector - Base cut-off current $I_E = 0$ $V_{CB} = 500V$ $T_C = 125^{\circ}C$			10	$\mu A$
				100	
$I_{EBO*}$	Emitter cut-off current $I_C = 0$ $V_{EB} = 5V$ $T_C = 125^{\circ}C$			10	$\mu A$
				100	
$V_{CE(sat)*}$	Collector - Emitter saturation voltage $I_C = 100mA$ $I_B = 10mA$		0.05	0.1	V
	$I_C = 2A$ $I_B = 200mA$		0.15	0.3	
	$I_C = 5A$ $I_B = 500mA$		0.3	0.6	
$V_{BE(sat)*}$	Base - Emitter saturation voltage $I_C = 2A$ $I_B = 200mA$		0.8	1.1	V
	$I_C = 5A$ $I_B = 500mA$		0.9	1.2	
$V_{BE(on)*}$	Base - Emitter saturation voltage $I_C = 1A$ $V_{CE} = 4V$		0.8	1.0	V
$h_{FE*}$	DC Current gain $I_C = 100mA$ $V_{CE} = 4V$	20	45		—
	$I_C = 2A$ $V_{CE} = 4V$	20	40		
	$I_C = 5A$ $V_{CE} = 4V$	20			

\* Pulse test  $t_p = 300\mu s$ ,  $\delta \leq 2\%$

**DYNAMIC CHARACTERISTICS** ( $T_{case} = 25^{\circ}C$  unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$f_T$	Transition frequency $I_C = 100mA$ $V_{CE} = 4V$ $f = 10MHz$		20		MHz
$C_{ob}$	Output capacitance $V_{CB} = 20V$ $I_E = 0$ $f = 1.0MHz$		200		pF